

Biology	Group-I	Paper-I
Time: 1.45 Hours	(Subjective Type)	Marks: 48

(Part-I)

Q.2. Write short answers to any Five (5) questions: (10)

(i) Differentiate between function of mitochondria and ribosomes.

Ans Mitochondria are the sites of aerobic respiration, and are the major energy production centres. While ribosomes are the sites of protein synthesis.

(ii) Write down names of bio-molecules groups.

Ans 1. Micromolecules 2. Macromolecules

(iii) Write two characteristics of good hypothesis.

Ans Following are two characteristics of good hypothesis:

- 1- It should be a general statement.
- 2- It should be a tentative idea.

(iv) Write definition of bio-informatics.

Ans Bio-informatics is the application of computer technology to the management of biological information. Computers are used to gather, store, analyze and integrate biological and genetic information which can then be applied to gene-based drug discovery and development.

(v) Write down two benefits of bio-diversity.

Ans Following are two of the benefits of bio-diversity:

1. Biodiversity provides food for humans.
2. It plays a part in regulating the chemistry of our atmosphere and water supply.

(vi) Write two effects of deforestation.

Ans Following are the two effects of deforestation:

1. Deforestation affects the amount of water in soil and moisture in atmosphere.

2. Deforestation also contributes to decreased transpiration, which lessens cloud formation. This ultimately reduces the sources of rains.

(vii) Define blebs. What is another name of these?

Ans Cell membrane makes irregular buds known as blebs. Another name of blebs is apoptotic bodies.

(viii) Differentiate between chromatin and chromosomes.

Ans Chromosomes are visible only during cell division while during interphase of cell they are in the form of fine thread-like structures known as chromatin.

Q.3. Write short answers to any Five (5) questions: (10)

(i) State the cell theory.

Ans According to cell theory:

1. All the organisms are composed of one or more cells.
2. Cells are the smallest living things, the basic unit of organization of all organisms.
3. Cells arise only by divisions in previously existing cells.

(ii) What is meant by hypertonic and hypotonic solutions?

Ans A hypertonic solution has relatively more solute. While a hypotonic solution has relatively less solute.

(iii) Define diffusion.

Ans It is the movement of molecules from an area of higher concentration to the area of lower concentration i.e., along concentration gradient.

(iv) Write down the two characteristics of enzymes.

Ans Following are the two characteristics of enzymes:

- (i) The enzymes are specific in their action.
- (ii) These are protein in nature.

(v) Differentiate between anabolism and catabolism.

Ans Anabolism is the formation of the larger molecules from smaller ones but catabolism is the breakdown of larger molecules into smaller ones. Usually, energy is released in catabolism and it is utilized in anabolism.

(vi) What is meant by optimum temperature?

Ans Every enzyme works at its maximum rate at specific temperature called as optimum temperature for that enzyme.

(vii) Define cellular respiration.

Ans In cellular respiration, food is oxidized to CO_2 while O_2 is reduced into H_2O . The cellular energy-yielding process is called cellular respiration.

(viii) Differentiate between aerobic and anaerobic respiration.

Ans Differences between aerobic and anaerobic respiration:

Aerobic respiration	Anaerobic respiration
1. It occurs in the presence of oxygen.	1. It occurs in the absence of oxygen.
2. Glucose is completely broken down to release CO_2 and water.	2. Glucose is incompletely broken down to release the product in the form of lactic acid or ethanol.
3. Energy is released in large amount.	3. Energy is released in less amount.
4. It takes place in the cytoplasm as well as in mitochondria.	4. It takes place only in the cytoplasm.

Q.4. Write short answers to any Five (5) questions: (10)

(i) Differentiate between nutrient and nutrition.

Ans The process in which food is obtained or prepared, absorbed and converted into body substances for growth and energy, is called nutrition. On the other hand, nutrients are the elements and compounds that an organism obtains and uses for energy or for the synthesis of new materials.

(ii) What are vitamins? What are the two main groups of vitamins?

Ans Vitamins are the chemical compounds that are required in low amounts but are essential for normal

growth and metabolism. Vitamins may be divided into two groups: the fat-soluble vitamins (A, D, E and K) and the water-soluble vitamins (B and C).

(iii) Define balanced diet.

Ans A diet containing all the nutrients for the growth of an organism's body is called as balanced diet. The requirement of balanced diet is according to the age, sex and physical activity of an organism. By taking imbalanced diet, different types of diseases are caused.

(iv) What are the food sources of proteins?

Ans Dietary sources of proteins are meat, eggs, grains, legumes, and dairy products such as milk and cheese.

(v) Describe the preventive measures about dengue fever.

Ans Following are the preventive measures about dengue fever:

1. Cover all containers that hold water to prevent mosquito from accessing the water.
2. Properly dispose articles that are able to collect water such as empty lunch boxes, cans and glass bottles.
3. Ensure that plastic sheets etc. used for weather protection in open areas are properly drained.
4. Clear the water accumulated on tray of refrigerator and from flower pots.
5. Clear household garbage everyday.

(vi) What is systematic circulation?

Ans The pathway on which oxygenated blood is carried from heart to body tissues and in return deoxygenated blood is carried from body tissues to heart is called systemic circulation or circuit.

(vii) How the sound of lubb dub is produced during heartbeat?

Ans When ventricles contract, tricuspid and bicuspid valves close and "lubb" sound is produced. Similarly, when ventricles relax, the semilunar valves close and "dub"

sound is produced. The sound of "lubb-dubb" can be heard with the help of a stethoscope.

(viii) Write any two differences between arteries and veins.

Ans Following are the two differences between arteries and veins:

1. Arteries carry blood away from heart while veins carry blood towards hearts.
2. Arteries are thick and elastic but veins are thin and less elastic.

(Part-II)

Note: Attempt any Three (3) questions.

Q.5.(a) Describe role of Muslim Scientists.

(4)

Ans Muslim Scientists:

Muslim scientists have made great contributions to the study of science and we are aware of their success in different fields of science. Here we would summarize the work of Jabir Bin Hayan, Abdul Malik Asmai and Bu Ali Sina in the development of the present-day knowledge of plants and animals.

Jabir Bin Hayan (721 – 815 AD):

He was born in Iran and practised medicine in Iraq. He introduced experimental investigation in chemistry and also wrote a number of books on plants and animals. His famous books are "Al-Nabatat" and "Al-Haywan".

Abdul Malik Asmai (740 – 828 AD):

He is considered the first Muslim scientist who studied animals in detail. His famous writings include "Al-Abil (camel)", "Al-Khail (horse)", "Al-Wahoosh (animal)", and "Khalq al-ansan".

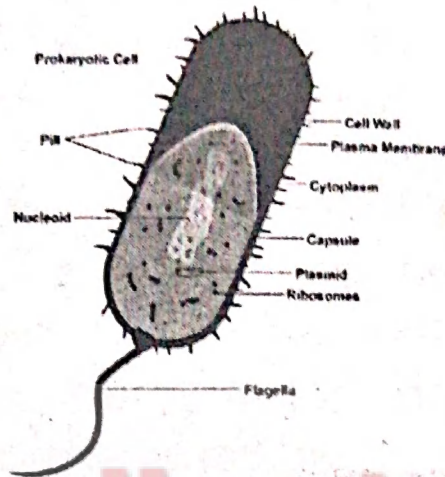
Bu Ali Sina (980 - 1037 AD):

He is honoured as the founder of medicine and called as Avicenna in the West. He was a physician, philosopher, astronomer and poet. One of his books "Al-Qanun-fi al-Tib" is known as the canon of medicine in West.

(b) Differentiate between prokaryotes and eukaryotes. (5)

Ans Prokaryotic and Eukaryotic cells:

Prokaryotes possess prokaryotic cells which are much simpler than the eukaryotic cells. The main differences between prokaryotic and eukaryotic cells are as follows:



Nucleus:

Eukaryotic cells have prominent nucleus (bounded by nuclear envelope) while prokaryotic cells do not have prominent nucleus. Their chromosome consists of DNA only and it floats in cytoplasm near centre. This region is called nucleoid.

Other Organelles:

Eukaryotic cells have membrane-bounded organelles like mitochondria, Golgi apparatus, endoplasmic reticulum, etc., while such membrane-bounded organelles are not present in prokaryotic cells.

The ribosomes of eukaryotic cells are larger in size as compared to the ribosomes of prokaryotic cells.

Size:

Eukaryotic cells are, on average, ten times larger than prokaryotic cells.

Cell Wall:

The cell wall of eukaryotic cell is made of cellulose (in plants) or chitin (in fungi). All prokaryotic cells have cell

wall, which is made of peptidoglycan (a large polymer of amino acids and sugars).

Q.6.(a) Write a detailed note on apoptosis.

(4)

Ans **Apoptosis:**

Apoptosis is one of the main types of programmed cell death. During apoptosis, cell shrinks and becomes rounded due to the breakdown of cytoskeleton by enzymes. Its chromatin undergoes condensation and nuclear envelope breaks. In this way, nucleus spreads in the form of several discrete chromatin bodies. Cell membrane makes irregular buds known as blebs. Blebs break off from the cell and are now called apoptotic bodies, which are then phagocytosed by other cells.

Apoptosis can occur when a cell is damaged or undergoes stress conditions. Apoptosis removes the damaged cell, preventing it from getting further nutrients, or to prevent the spread of infections. Apoptosis also gives advantages during development. For example, during the formation of fingers, the cells between them undergo apoptosis and the digits separate.

(b) Describe the summary of the events of light reaction.

(5)

Ans **Light Reactions:**

The summary of the events of light reactions is as follows:

1. When chlorophyll molecules absorb light, their energy level increases and their electrons are emitted.
2. Electrons are passed to electron transport chain to produce ATP.
3. Light also breaks water molecule (photolysis) and oxygen is released. The hydrogen atoms of water give electrons to chlorophyll and become ions.
4. The electrons of chlorophyll, after the production of ATP, and the hydrogen ions of water are used for the reduction of NADP^+ into NADPH.

BIOLOGY 9TH
Q.7.(a) What is the role of calcium and iron in human growth? (4)

Ans For Answer see Paper 2015, (Group-II), Q.8.(a).

(b) Write a detailed note on structure and function of human heart. (5)

Ans For Answer see Paper 2015, (Group-II), Q.9.(b).

